

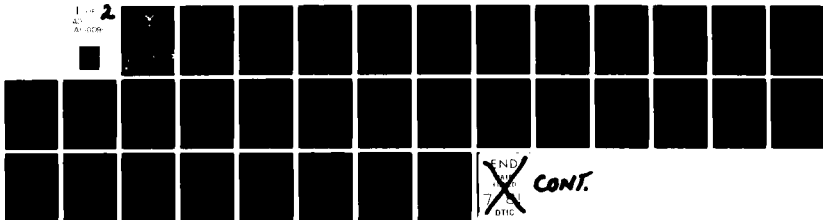
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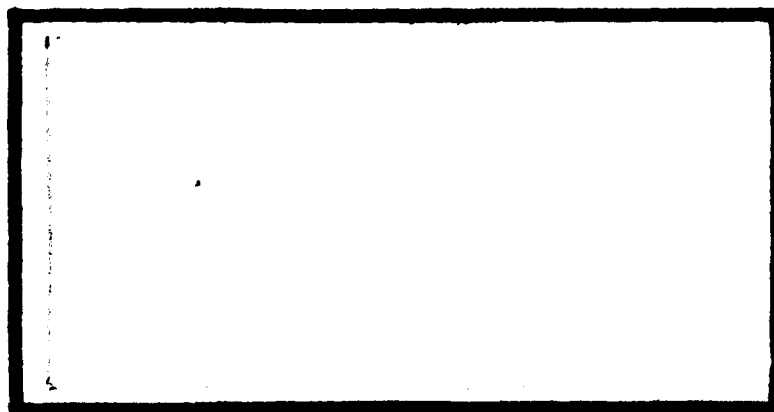
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UNDERSTANDING THE NATURE OF DOCTRINE:
AN ESSENTIAL FIRST STEP

Todd I. Stewart, Major, USAF
Richard V. Badalamente, Lt Col, USAF
Charles R. Margenthaler, Col, USAF

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This paper attempts to challenge the reader with a number of basic questions concerning the essential nature of doctrine in general, and space doctrine in particular. It also poses several questions concerning the process by which doctrine evolves or, alternatively, the process by which it can be systematically developed. The motivation for this paper was a concern by the authors that the basic concept of doctrine and its role in the Air Force decision-making structure is not well or widely understood and that a clearer, more common understanding of this notion is an essential prerequisite to meaningful dialogue directed at the development of military space doctrine. Quite simply, before we embark on any journey toward the development of space doctrine, we need to have a clear understanding of our destination and the road we will take to get there.

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UNDERSTANDING THE NATURE OF DOCTRINE:
AN ESSENTIAL FIRST STEP

A School of Systems and Logistics AU-AFIT-LS Technical Report

Air University

Air Force Institute of Technology

Wright-Patterson AFB, Ohio

By

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February 1981

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"The modern tendency has been to search for principles which can each be expressed in a single word--and then need several thousand words to explain them. Even so, these 'principles' are so abstract that they mean different things to different men, and, for any value, depend on the individual's own understanding of war. The longer one continues the search for such omnipotent abstractions, the more do they appear a mirage, neither attainable nor useful--except as an intellectual exercise."

B. H. Liddell Hart, "Strategy," 1954

INTRODUCTION

Background and Motivation

In their call for papers for this first Military Space Doctrine Symposium, our hosts, the space doctrine group here at the Academy, shared with us their objectives for promoting the development of military space doctrine. These objectives are certainly timely and appropriate. They focus our attention on the importance of sound doctrine as a guide to each of us in our respective roles as we incorporate the dimension of space in our future operations. This symposium suggests considerable promise for furthering these objectives. Hopefully, it will become an annual event.

While comparing notes on how we might make a meaningful contribution to the success of this inaugural symposium, we were plagued by a nagging problem. Through our dialogue, it became apparent that each of us held rather diverse and somewhat vaguely defined notions of what exactly is meant by the notion of "doctrine" in general, and "space doctrine" in particular. Discussion of the general concept of doctrine with an expanded circle of colleagues provided a measure of comforting evidence that our lack of a clear understanding and

a common definition was not simply a "personal problem." A cursory review of literature in the area of doctrine, policy, strategy, and tactics revealed a similar pattern of abstractness and inconsistency.

It seems apparent that a clear understanding and consistent definition of the notion of doctrine--and its role in our military decision structure--would be a useful, if not essential, first step in establishing a meaningful and effective dialogue about the development of military space doctrine. Quite simply, we all need to be communicating on the same wavelength.

Further reflection on the essential nature and purpose of doctrine led us to several related and perhaps even more thorny issues. First, the fact that we are meeting here this week in a Military Space Doctrine Symposium provides at least implicit testimony to the belief that present doctrine concerning the use and posturing of our aerospace forces in the space environment is, in some sense, inadequate. If this is indeed an accurate perception, how did we arrive at that conclusion? What criteria and related standards were applied? If we are unable to answer this question, how will we ever know when our doctrine is "good enough" or, conversely, when it needs to be changed? More to the point, why is our existing aerospace doctrine inadequate for guiding our operations in space? This question is rather effectively captured by the more proverbial one: "If you don't know where you are going, how will you know when you've arrived?"

Not only is it necessary to have a clear understanding of the purpose of doctrine and our specific criteria and objectives for developing doctrine, but we also need an equally lucid understanding of the process by which doctrine is--and should be--developed. What model or framework should we use to guide us in the systematic and directed development of doctrine?

In other words, in thinking about the development of military space doctrine, we need to consider both product and process, i.e., where we want to go and what path we will travel to get there.

Purpose and Scope

The general purpose of this paper is to identify and briefly discuss a number of seminal questions and issues concerning the essential character of doctrine and the process of its development, questions and issues which should ideally be considered by each of us before embarking on any journey toward the development of a specific military space doctrine. Our goal is to raise several points which we believe need to be considered by all attendees at this symposium before and during their discussion of the specific topic areas to be covered at the respective round table sessions. You will not find, nor should you expect to find, definitive answers to the questions we raise. That is not our aim. Rather, we seek to facilitate the systematic and directed development of military space doctrine by highlighting some of the basic points which we believe need to be clarified and generally agreed on before proceeding with more narrowly focused deliberations. Two general topic areas are explored: the product and the process. The product perspective focuses on questions and issues which, when answered and resolved, will clarify the essential character and purpose of doctrine and will provide us with additional insight into the nature of our ultimate destination. By contrast, the process perspective is intended to surface those questions and issues we need to consider concerning the route to our destination of a comprehensive and integrated doctrine for the employment of aerospace forces in a variety of environments, including space. So, as we are fond of saying in academia, let's begin with a pop quiz. Take out a piece of paper and see if you can answer the following questions:

THE PRODUCT: THE NATURE OF DOCTRINE

1. How is doctrine defined?

A number of alternative definitions and interpretations have been offered for the concept of doctrine. However, none of these has been universally accepted. Perhaps the most general viewpoint is that doctrine is simply a teaching. The American Heritage Dictionary of the English Language provides the following general definition:

1. Something that is taught; a principle or body of principles taught or advocated in instruction.
2. A principle or creed of principles presented for acceptance or belief, as by a religious, political, scientific, or philosophical group; *dogma*; *theory*. (1)

A related, but perhaps somewhat more specific, viewpoint is that a doctrine is a set or (more properly) a system of related principles, tenets, or precepts concerning the actual or desired nature of some phenomenon. The utility of this interpretation is that it points to the idea that a doctrine may be either descriptive (what is) or prescriptive (what should be).

Another common interpretation emphasizes the notion that a doctrine connotes a moral or philosophical code, i.e., a particular value system. In this context, a doctrine essentially represents a statement or description of what constitutes acceptable behavior within a specific group, organization, or society.

A somewhat more comprehensive definition suggests that a doctrine is a set or system of teachings, beliefs, principles, values, or tenets derived from a theory about the nature of a particular phenomenon by some authority to guide or influence the thinking and behavior of others concerning that phenomenon. Note that this viewpoint suggests that a doctrine is derived

from some underlying theory (or theology) and is perpetuated by some authority to influence others. In considering the concept of doctrine, General Curtis E. LeMay captured many of these ideas in the following definition:

At the very heart of warfare lies doctrine. It represents the central beliefs for waging war in order to achieve victory. Doctrine is of the mind, a network of faith and knowledge reinforced by experience which lays the pattern for the utilization of men, equipment, and tactics. It is the building material for strategy. It is fundamental to sound judgment. (2)

The Department of Defense Dictionary of Military and Associated Terms

(JCS Pub 1) provides a somewhat similar interpretation:

doctrine - Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application. (3)

AFM 1-1, Functions and Basic Doctrine of the United States Air Force, does not offer an explicit definition for the concept of doctrine. However, AFM 1-1 does provide an implicit description by stating:

This manual is an authoritative statement for the employment of Air Force resources. As such, the terms used here are descriptive in nature and should be viewed from a philosophical, not legal, context. (4)

This manual also includes in its introduction the following quotation by General Thomas D. White which effectively captures the essence of the notion:

In the development of superior air leadership, the education process cannot treat air doctrine as a set of abstract principles to be learned by rote, like mathematical formulas, and dutifully filed away for future reference. Air doctrine is made up not of abstractions, but of dynamic living truths forged in the heat of combat and tested in the crucible of war. (5)

Finally, Figure 1 presents a graphical model of the construct of doctrine. This interpretation suggests that there are essentially five basic factors with which we are concerned in attempting to understand and comprehend the world in which we live and operate. These factors are facts, principles,

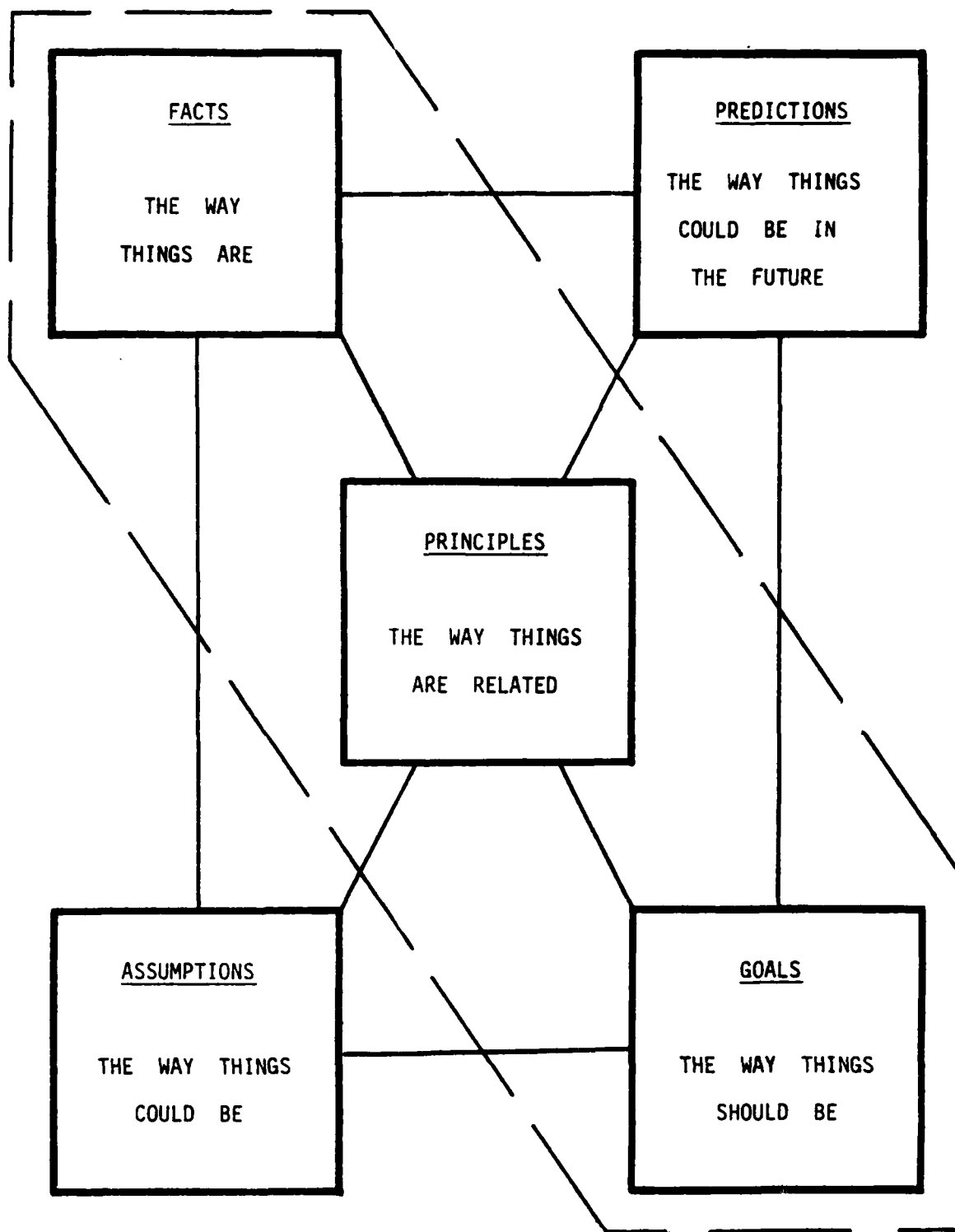


FIGURE 1: The Structure of Doctrine

goals, assumptions, and predictions. The first three of these factors, according to the model of Figure 1, constitute doctrine. (6)

2. How are the notions of doctrine, policy, strategy, and tactics related within the military decision-making structure?

Much of the confusion which exists concerning these terms arises from their inconsistent interpretation and use. Many people, for example, commonly use the terms doctrine and policy synonymously. Others suggest that there is a difference between doctrine and policy, but it is more one of degree than kind. Others suggest that there is a precedence relationship between these concepts such that the development of doctrine must precede the subsequent development of policies. In turn, policies represent the object of strategies and tactics. In this view, doctrine represents a system of principles or inherent truths upon which we build our policies. A contrasting viewpoint argues that policy leads to doctrine, e.g., national security policy leading to military doctrine in general, and aerospace doctrine in particular.

Yet another interpretation suggests that all of these concepts are related to the process of allocating resources in the pursuit of some goal or set of goals. The principal distinction is one of degree in terms of scope or generalizability and of abstractness. Figure 2 illustrates the relationships between doctrine, policy, strategy, tactics, and operational decisions. This hierarchy does not, however, necessarily infer a precedence relationship. Because of the inherent vagueness in the distinctions between these conceptual regions, critics argue that these labels may have pedagogical significance, but not much practical utility.

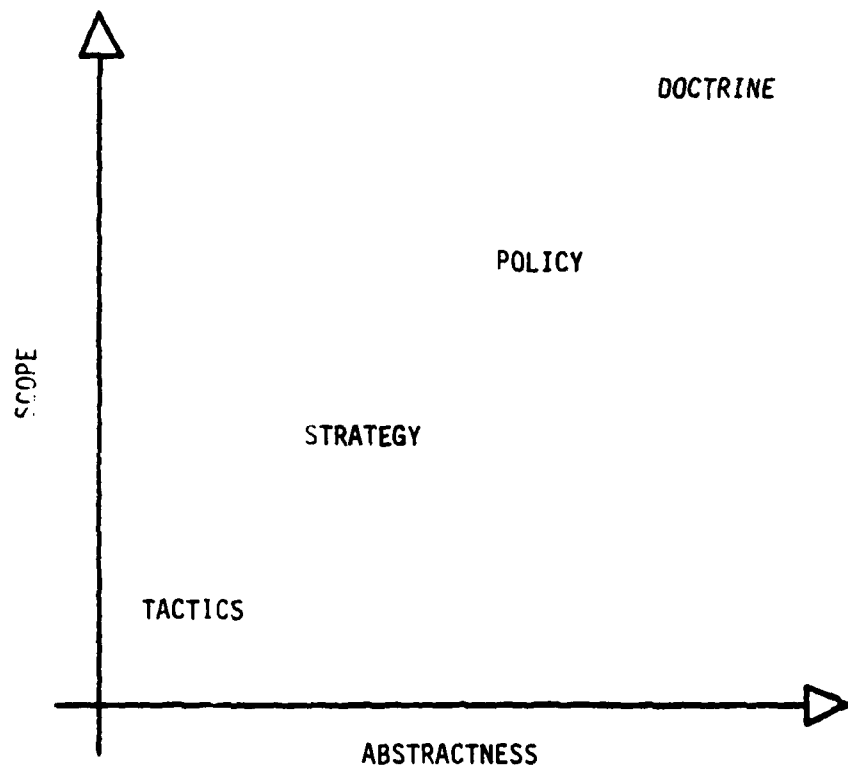


FIGURE 2: Conceptual Relationship Between Doctrine, Policy, Strategy, and Tactics

One common interpretation of the relationship between these respective concepts associates each with different levels in the hierarchy of an organization's decision structure. In this view, the development of doctrine and policy is the responsibility of senior or executive management, while the strategy and tactics to implement these policies is the responsibility of managers at subordinate levels. JCS Pub. 1, for example, defines strategy as:

strategy - The art and science of developing and using political, economic, psychological, and military forces as necessary during peace and war, to afford the maximum support to policies, in order to increase the probabilities and favorable consequences of victory and lessen the chances of defeat. (7)

Others take exception to this hierarchical differentiation and argue (from a systems perspective) that doctrine, policy, strategy, and tactics are different types of decision-making behavior, all of which are relevant to every level in an organization.

3. What is the purpose of Air Force doctrine?

A common response to this question is that Air Force doctrine, like any doctrine, is intended to guide and influence the thinking, decision making, and behavior of others, usually subordinates, concerning some phenomenon or area of activity. In this context, the object of the indoctrination process is, in part, to coordinate the decisions and actions of individuals and/or groups who are involved with diverse facets of some complex activity and whose activities interact with and affect one another. Relatedly, the purpose of doctrine is to provide the members of a particular group with norms of expected behavior.

A more specific viewpoint argues that the purpose of Air Force doctrine is to provide decision makers at all levels within the decision structure with principles and guidelines to use in developing more specific policies, strategies, and tactics in pursuing mission goals and objectives. It is intended to imbue Air Force decision makers with the "corporate" ideology concerning the appropriate and effective use of aerospace forces.

A related question of critical importance for the members at this symposium is: "What is (should be) the specific purpose of military space doctrine?" Presumably, an appropriate response will capture the idea that its purpose is to describe principles and precepts to be followed by Air Force policy makers, analysts, strategists, planners, and tacticians in making decisions concerning the use of aerospace forces within the space environment. Figure 3 illustrates the purpose which doctrine serves in the logistics long range planning process (8). However, our concern here is not with a definitive statement of purpose for military doctrine. Rather, our primary concern is that we at least pause to consider what this purpose is or should be before we jump into the process.

4. What different types of Air Force doctrine have been defined?

AFM 1-1 defines the following four different categories of doctrine:

- (a) Basic doctrine embodies fundamental ideas about how the use of airpower has evolved since the beginning of military air operations. It examines knowledge gained through this experience and through study, and it outlines principles for the successful use of aerospace power. To expand on the responsibilities and employment of the United States Air Force, additional categories of doctrine are developed using basic doctrine as a foundation.

MODEL OF LOGISTICS LONG RANGE PLANNING

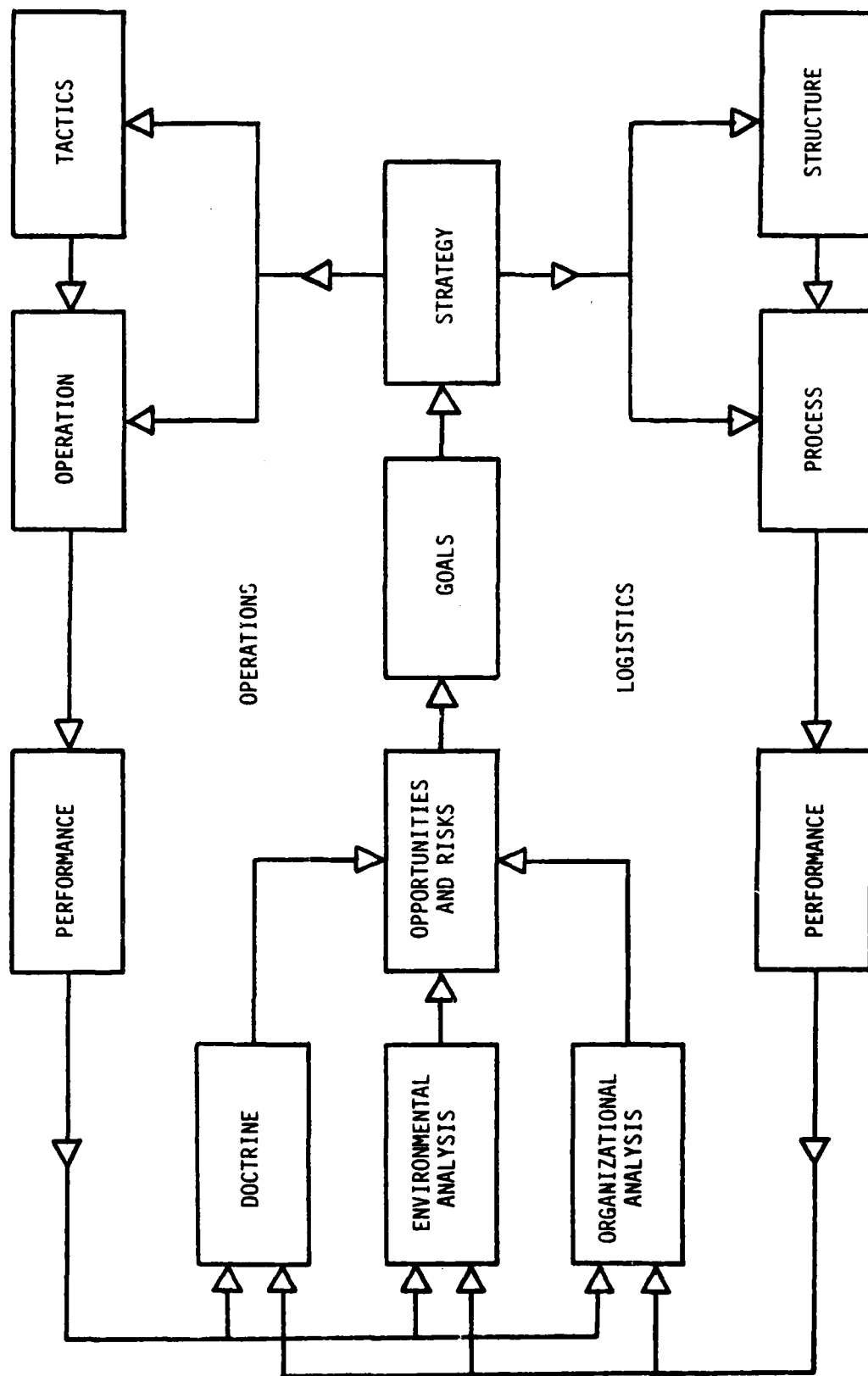


FIGURE 3: Illustration of the Role of Doctrine in the Logistics Long Range Planning Process

- (b) Operational doctrine consists of the rules for organizing, directing, and employing aerospace forces in the conduct of mobility, tactical, and strategic operations. It also describes the specific missions and tasks involved in carrying out these operations. It covers many of the specialized functions within these missions and tasks, such as personnel, intelligence, research and development, legal, communications, physical security, inspection, and logistics.
- (c) Doctrine for joint operations describes responsibilities for force employment by two or more U.S. military Services. These operations are directed by the President through the Joint Chiefs of Staff.
- (d) Doctrine for combined operations is coordinated among the Services of member nations of defense alliances. It is developed to support mutual defense agreements or treaties and concerns employment of U.S. military forces in combined operations. (9)

Considering these definitions, how do we (should we) define the term "space doctrine"? Is it, or should it be, a separate category of doctrine founded on basic doctrine, i.e., a category comparable to operational, joint, and combined doctrine? Should it be an entirely new category of operational doctrine, based on environment rather than on function? Or alternatively, should we interpret space doctrine as those elements or subsets of existing doctrinal categories which deal with the use of our aerospace forces within or from the space environment? Figure 4 suggests still another possible interpretation in which a matrix of doctrinal categories might be constructed.

5. What criteria and related standards are (should be) applied to assess the adequacy of Air Force doctrine in general, and space doctrine in particular?

To reiterate a question posed in the introduction to this paper, "Why do we need a military space doctrine?" Stated alternatively, "Why is our

| | | OPERATIONAL ENVIRONMENT | |
|----------------|---|-------------------------|-------|
| | | AERO | SPACE |
| BASIC DOCTRINE | | | |
| | OPERATIONAL DOCTRINE * Personnel * Intelligence * R & D * Legal * Communications * Physical Security * Inspection * Logistics | | |
| | JOINT DOCTRINE | | |
| | COMBINED DOCTRINE | | |

FIGURE 4: Conceptual Matrix for Developing Air Force Doctrine

existing Air Force doctrine, as described in AFM 1-1, AFR 1-2, and other related authoritative references, inadequate with respect to operating within and from a space environment?" What criteria and related standards have we (implicitly) applied to our existing aerospace doctrine to conclude that it is, in some sense, lacking? And more basically, why is it important that we have a clear understanding of these criteria and standards?

The process of management can be distilled down to two essential ingredients: decision and control. Consequently, if we desire to effectively and efficiently manage the process of developing a military space doctrine, we need a basis for controlling the process. We need to decide how we will measure progress (criteria) toward an acceptable military space doctrine and, considering each of these criteria, just what we mean by "acceptable." By first agreeing on the criteria and related standards which are appropriate for controlling this particular process, we establish a basis for systematically setting specific objectives for the continuing maintenance and improvement of our doctrine.

As in the case of the other questions posed in this paper, the answer to this one is also rather subjective. A definitive response is probably an unreasonable expectation. Perhaps the best we can hope to achieve is a consensus based on discussion and dialogue. However, we can suggest a number of criteria which seem to us (a priori) to be reasonable candidates for the task. Probably the most fundamental criterion we can apply is the question, "Does it (our space doctrine) effectively do what it is intended to do?" Does it lead to the development of policies, strategies, and tactics which are effective in meeting and supporting national security objectives? Unfortunately, this type of criterion is inherently retrospective. In the

context of military operations, the opportunity to "field test" doctrinal principles or to derive such principles from experience is often limited and prohibitively costly. Nevertheless, an ideal criterion and standard for any doctrine is that it be based on demonstrated or proven principles and precepts.

Another seemingly important criterion by which Air Force (space) doctrine might be assessed is its consistency with the latest technology available to both the United States and its adversaries, principally the Soviet Union. Since a basic purpose of Air Force doctrine is to guide the employment of both weapon and warfare systems, a doctrine which fails to incorporate the full potential of existing and emerging technologies would seem, by most any logic, to be inadequate. Similarly, any such doctrine which simplistically or inaccurately assesses the full capability of (e.g.) Soviet technology (in space) would also seem to be inadequate.

A related criterion for evaluating doctrine is its consistency with available resources. A doctrine which is predicated on unrealistic assumptions concerning the availability of critical resources, e.g., personnel, funds, energy, equipment, facilities, and public support, would also seem to be inherently deficient. Similarly, it is equally apparent that a sound doctrine must consider the availability of critical resources to the Soviets.

In addition to being realistic, i.e., usable and practical, sound doctrine needs, we believe, to be flexible. Doctrine needs to be readily adaptable to changes in the nature of the phenomena with which that doctrine is concerned. It needs to be consistent with the changing nature of the social, political, economic, and ecological environments with which it is related. Moreover, sound doctrine also needs to be continually adapted to changes in the doctrines, policies, strategies, and tactics of the Soviets.

Finally, we think it is important for sound doctrine to be internally consistent. The principles, tenets, and precepts comprising a military space doctrine need to be consistent with each other and with other related doctrines and policies. In this context, we see doctrine as a system of interacting concepts, not simply a set of such concepts. The rationale for this view is effectively captured in the following statement by General Thomas D. White:

...in the context of the Air Force's missions and combat technology, manned aircraft, unmanned systems and manned spacecraft join together in compatible and complementary roles to form a functionally complete system. (10)

THE PROCESS: DEVELOPING DOCTRINE

1. What is the general process by which doctrine develops?

There are a number of alternative views to this question. One view holds that the process by which doctrine develops is essentially one of evolution, i.e., through the process of natural selection. In this view, doctrine is seen as the "product of effective practice." Doctrine is essentially a compendium of lessons learned in practice and through experience. However, if this is the case, does this imply that we cannot have a doctrine for the employment of new technologies and related weapon systems?

An alternative view is that doctrine should guide the development and application of new technologies. This perspective implies that, at least in some sense, doctrine precedes application. This "chicken-and-egg" dichotomy is perhaps a false one in that, realistically, the process is an interactive one in which theory serves as a guide to practice, and practice provides an important input into the development of improved theory.

Another question related to this one is particularly significant to the issue of military space doctrine. Does doctrine develop in an evolutionary sense or, alternatively, is doctrine developed as a result of a more consciously systematic and directed process? Realistically, the most appropriate answer is "yes!" But what should it be? In our view, the process of developing Air Force doctrine has been semi-structured at best. We see a need for additional emphasis on approaching the process of doctrine development in a more systematic and perhaps somewhat less evolutionary fashion.

2. What process should be used to systematically develop military space doctrine?

It seems unlikely that there is one best way to manage the process of systematically developing military space doctrine. A number of alternatives are certainly feasible. However, if doctrine is to be realistic and effective, we believe it is important that it be developed in a systematic and continuing fashion, rather than in a reactionary fashion, i.e., in response to obvious inadequacies.

The following model is offered to facilitate discussion and debate of an appropriate process for systematically developing military space doctrine. It should be noted that while the steps in this suggested model are generally sequential, the implied sequence is not necessarily strict or absolute.

(1) Determine who should be involved in the process of developing military space doctrine. Two points should be emphasized here. First, we believe that to effectively manage any process, it is necessary to fix responsibility and accountability. It should be clear to everyone concerned who specifically is responsible for developing military space doctrine on a

continuing basis. Secondly, it seems apparent that involvement in space doctrine development should be as widespread as necessary to insure that the resulting doctrine includes all appropriate facets and relevant variables.

(2) Determine the specific purpose of military space doctrine and its relationship to other existing Air Force doctrines. A clear understanding by all concerned as to what is to be accomplished is important to the efficient and effective achievement of that goal. As we previously noted, one obvious purpose of military space doctrine is to provide defense analysts, mission planners, policy makers, and strategists with appropriate and effective guidance for operating in space to further national security objectives. In addition to defining in specific terms the purpose of military space doctrine, it is also important that all concerned have a clear and relatively common understanding as to the manner in which space doctrine relates to other forms of doctrine. Our own preference is to interpret the term "space doctrine" as a reference to those elements of Air Force basic, operational, joint, and combined doctrine which pertain to the employment of our forces in space or using space.

(3) Determine the specific criteria and standards to be applied to periodically assess the adequacy of our military space doctrine; for each criterion, specify the frequency with which it will be applied to assess the adequacy of current military space doctrine. This step in our suggested algorithm is probably the most important and perhaps the most difficult. It is in this step that we must determine as explicitly as possible how and how often we will assess the adequacy and soundness of our military space doctrine. We have previously suggested a number of very general criteria which we believe should be applied in evaluating the current "health" of our

space doctrine. That list is by no means complete, nor is it specific enough to be of much use in actually developing a comprehensive and practical space doctrine.

The process of determining specific space doctrine assessment criteria, standards, and frequencies can be accomplished by a number of mechanisms. First, one might simply employ common techniques such as "brainstorming," the "Delphi" approach, or other similar nominal group methods to solicit from a panel of experts their opinions concerning specific criteria and standards which should be used in assessing the current adequacy of our military space doctrine. A somewhat more structured approach is to use a systems analysis technique known alternatively as "influence diagramming" or "causal-loop diagramming" to guide this process. In this technique, we first ask, "What factors significantly affect or influence the adequacy of our military space doctrine?" This question and a partial answer are graphically modeled in the influence diagram illustrated in Figure 5. In this figure, the "+" signs on the respective arrows represent direct (bivariate) relationships, i.e., the value of the dependent variable (in this case, "Adequacy of USAF Space Doctrine") will vary in the same direction as that of a preceding variation in one of the directly related independent variables. For example, if the level of "Comprehensiveness" increases, the adequacy of our space doctrine is postulated (by this model) to increase; if Comprehensiveness decreases, adequacy will, in turn, decrease. A "-" sign on an arrow would indicate an inverse relationship, i.e., as the value of the independent variable varies in one direction, the value of the dependent variable will vary in the opposite direction.

Several points should be noted in reviewing the influence diagram illustrated in Figure 5. First, it should be apparent that this diagram is incomplete

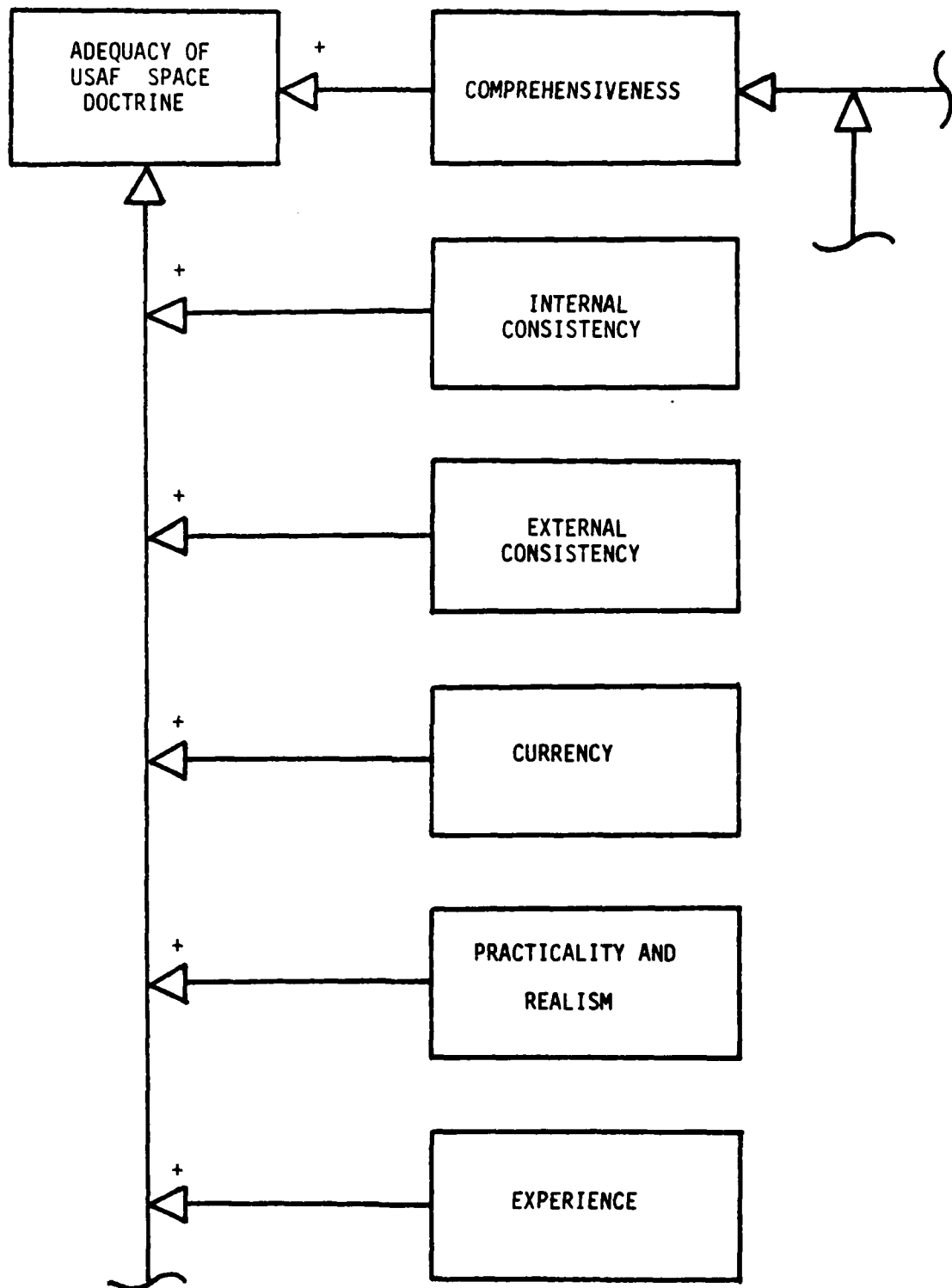


FIGURE 5: Influence Diagram for Factors Affecting the Adequacy of USAF Space Doctrine

in the sense that only a few of the likely criteria (factors) we really need to apply are listed in this example. Undoubtedly there are many others. Secondly, the criterion factors included in Figure 5 are still rather abstract. It is not, for example, expressly clear as to what specifically is meant by the term "Comprehensiveness." In this case, we use the term as a shorthand way of asking the question, "To what degree does current space doctrine include or consider all of the basic operational missions recognized in AFM 1-1?" Figure 6 captures this notion by illustrating those factors which are asserted in this model to significantly influence the level of "Comprehensiveness." In a similar fashion, each of the other independent variables illustrated in Figure 5 can be expanded by simply asking the question, "What variables can significantly affect or influence the value of this variable?" This expansion process can be continued in a similar iterative manner to whatever "level of resolution" is considered appropriate. In so doing, the potential exists for systematically building a model of the system of criterion variables which significantly affect the adequacy or soundness of our military space doctrine.

(4) Periodically assess existing military space doctrine using the specified criteria and related standards. An important ingredient in the control of any process, phenomenon, or variable of interest is systematic assessment. As used here, the term assessment refers to measurement or observation and comparison with some explicit or implicit standard. The point to emphasize here is that if military space doctrine is to be developed in a continuing systematic fashion, the assessment of its adequacy must also be accomplished in an equally systematic manner. We recommend that a specific frequency of assessment be established for each criterion used to evaluate the soundness of our space doctrine.

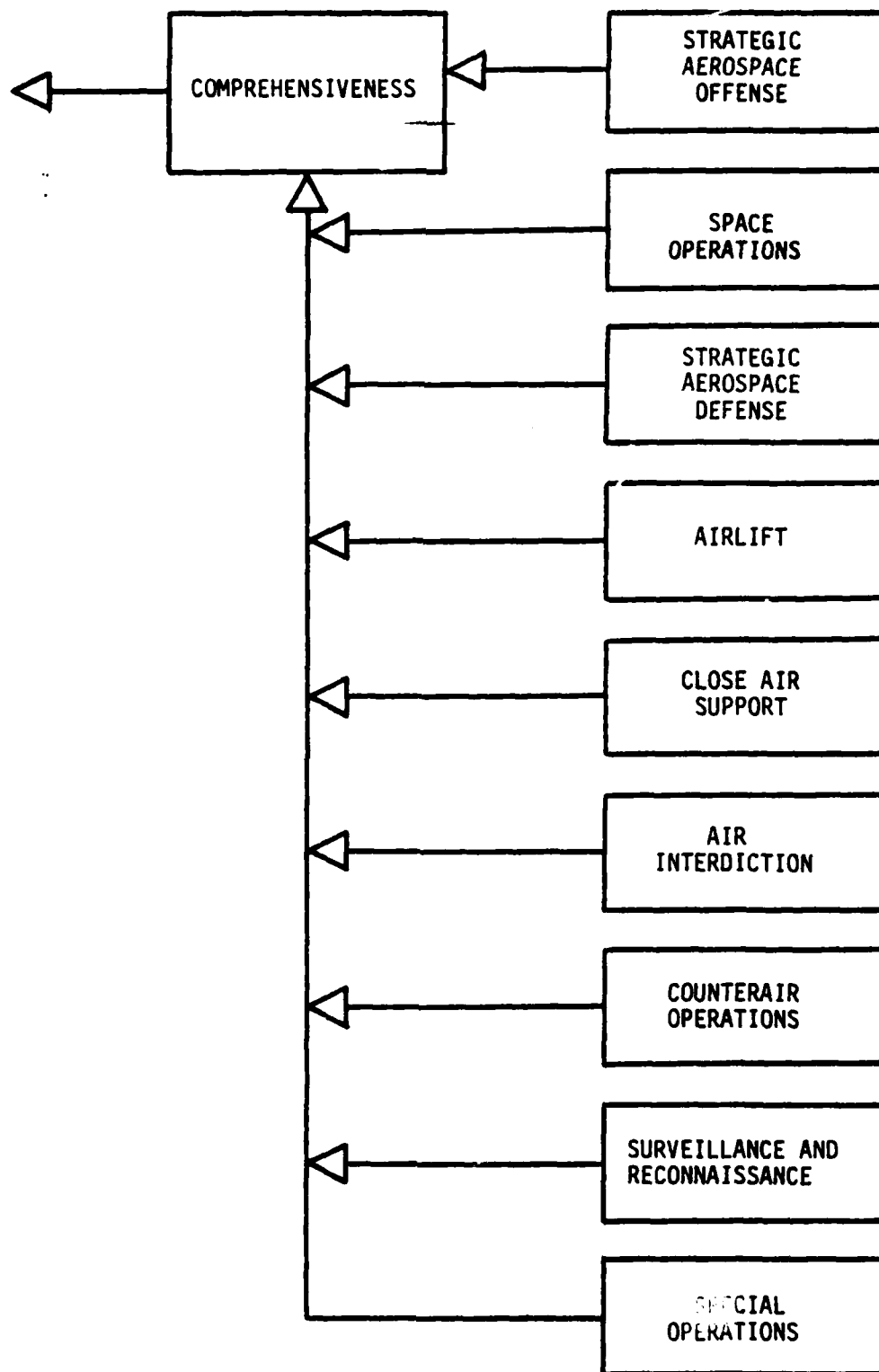


FIGURE 6: Expanded Influence Diagram (Refer to Figure 5)

(5) As a result of the assessment of existing space doctrine with each criterion and related standard, take one of the following actions:

(a) if current doctrine is inadequate as determined by comparing it to the criterion and standard, establish the correction of this deficiency as an objective for management action;

(b) if the comparison indicates that current space doctrine is adequate, then determine if the standard needs to be modified, i.e., increased or decreased;

(c) if the standards do not need to be adjusted, go back to step (4); if the standard does need to be changed, go to step (3).

The algorithm (or, more properly, heuristic) suggested here is not offered as being the definitive process which should necessarily be used to develop USAF space doctrine. However, we do believe it illustrates the type of general structured approach we need to take in systematically developing such doctrine.

CONCLUSION

How successful were you in answering the questions posed in this paper? How confident are you that your responses are consistent with the consensus of opinion of the other attendees at this symposium? If you are unsure of your responses, then we've essentially made our point--we need to invest some time and energy in understanding and clarifying where we are going and the route we will take to get there. We need to develop a reasonably common understanding of the nature of doctrine in general and of the specific nature and purpose of military space doctrine in particular. We need to have some common agreement on the relationships between space doctrine and other doctrinal types, i.e., basic doctrine, operational doctrine, joint doctrine, and combined

doctrine. Equally important, we need to clearly understand the process by which we can systematically develop and, on a continuing basis, maintain an effective military space doctrine. Perhaps most importantly, each of us needs to clearly understand our respective roles in developing and using military space doctrine in the context of our respective jobs.

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13 July 1981

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In early June, 1981 we forwarded three copies of the Compendium of Authenticated Logistics Terms, Definitions and Acronyms (ADA 100091) to your agency. A recent review reveals that page numbered "vii" is not totally correct.

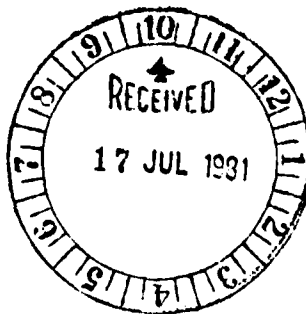
Please use the attached copy of page "vii" in future reproductions of the publications.

Thank you for your continued support.

Richard M. Davis

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